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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,236	09/15/2003	Eric J. Larsen	SONYP029	3753

25920 7590 07/11/2008
MARTINE PENILLA & GENCARELLA, LLP
710 LAKEWAY DRIVE
SUITE 200
SUNNYVALE, CA 94085

EXAMINER	
OMOTOSHO, EMMANUEL	
ART UNIT	PAPER NUMBER
3714	

MAIL DATE	DELIVERY MODE
07/11/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/663,236	LARSEN ET AL.	
	Examiner	Art Unit	
	EMMANUEL OMOTOSHO	3714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-19,21 and 46-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-19,21,46-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Request for Continued Examination (RCE)

This is in response to the RCE filed 4/28/08 in which claims 1, 4, 13-14 and 46 were amended. Claims 1, 4-19, 21 and 46-50 are pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-26,28-44 and 46-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kang US Patent 6,009,210 and further in view of Kanade et al. US Patent 6,151,009.

4. Kang teaches a method for processing interactive user control for a view of a scene displayed on a virtual window comprising:

5. In regards to claims 1,14,22,25,28,34,35,39,43,46,47,52,53,57

a. Identifying a head of a user that is to interact with the scene (Col 1 lines 43-47 and Col 3 lines 29-32)

b. Storing an initial frame of image data representing the head of the user (Col 3 lines 29-35)

c. Tracking the identified head of the user during display of the scene, the tracking enabling detection of a change in position of the head of the user (Abstract)

d. Tracking including identifying a search region within a frame of the user image data and comparing values within the search region to template values of the initial frame of the stored image data; adjusting a view frustum (which is being interpreted as the "view of the user into the virtual world") in accordance with the change in position of the head of the user (Col 2 lines 34-43 and Col 3 lines 4-21)

e. Repeating the identifying the search region, the comparing, and adjusting for successive frames of the scene, wherein the comparing is performed with the initial frame of the stored image data (Col 2 lines 34-43 and Col 9 lines 17-44)

f. A computing device and a display screen in communication with the computing device configured to display image data defined through a view-frustum (Fig 1)

g. Tracking device is a camera (Fig 1)

6. In regards to claims 2,15,53, a view frustum initially defined by a triangular gaze projection set between outer edges of a virtual window and a virtual position of the head

when the virtual position of the head is normal to a center point of the virtual window (Figs 1-3)

7. In regards to claim 3,16,23-24,53 adjusting the view-frustum moves the virtual position of the head away from normal relative to the center point of the virtual window (Col 2 lines 34-43)

8. In regards to claim 4,17, virtual position of the head being away from normal relative to the center point of the virtual window changes an angle of the triangular gaze projection, the change in angle of the triangular gaze projection displays a change in viewing angle of the scene provided by the video clip (Col 4 line 60- Col 5 line 49)

9. In regards to claim 5, the change in viewing angle of the scene is a result of the detected movement of the head of the user to enable the interaction with the scene (Col 4 line 60- Col 5 line 49)

10. In regards to claim 1,6-7,14,22-23,26,28-29,31,34,39,41,42,46,49,50,52 Kang fail to specifically teach

h. Adjusting a scale of the scene according to a change in a distance of the head of the user from a capture device

i. Using a capture device having depth-capturing capability.

11. Kanade teaches the use of a depth capturing camera for interaction with a view of a scene (abstract)

12. One of ordinary skill in the art, at the time of the invention, would have been motivated to have a system that interacts with a view of a scene using depth capturing

device to adjust a scale of the scene according to a change in a distance of the head of the user from the capture device. Using a depth camera, the system would be able to

j. Obtain distance or depth information from the object being tracked (inherent of "depth camera)

k. Determine any interaction such as occluding, shadowing, reflecting or colliding (Kanade abstract)

l. Generate appropriate output based on said determination (Kanade abstract)

13. **In regards to newly added limitations that further defined and claimed the definition of the view frustum defined by a triangular gaze projection set between outer edges of the virtual window and a position of the head when the position of the head is substantially normal to about a center point of the virtual window. Applicant should respectfully note that this is the known view projection associated with depth cameras. Depth cameras acquire and process recieved image data by performing a triangular coordinate transformation on each recieved pixel. The depth information is processed by reading the objects current location in reference to the windows center point (i.e. the need for calibration and storing initial image) and transforming the received location to an (x,y,z) coordinates. Where x and y corresponds to a position that relates to a position on the display screen and z corresponds to the distance from the position to camera. Hence the triangular projection. A constant focus on the**

object has to be maintained throughout the process for the system to be able to maintain the correct coordinates.

14. In regards to claim 8,30, the initial frame of image data is marker-less (Fig 1)

15. In regards to claim 9, the initial frame of data is maintained throughout the video clip (Fig 1)

16. In regards to claim 10,48,54 the video clip is of a video game. Although Kang teaches the method to be generally associated with virtual environment in computer systems, Kang further teaches that video games are well known in the art as virtual environment in a computer system (Col 1 lines 26-40)

17. In regards to claim 11, the interaction with the scene by tracking movement of the head of the user is independent of user hand-held controls for interacting with the video game (Col 1 lines 5-9)

18. In regards to claim 12,32,40,55, the method operation of tracking the identified head of the user during display of the video clip includes tracking a facial portion of the head and matching gray scale image data associated with the facial portion to image associated with a template of the facial portion (Col 9 lines 20-33)

19. In regards to claim 13,18-20,24,26,33,35,41,42,44,50,56, the method of adjusting a view frustum in accordance with the change in position of the head of the user includes identifying a point of interest of the scene of the video clip and modifying the view-frustum so that the point of interest appears at a constant position when displayed in successive video clips (Kang Claim 6). The Examiner should point out that each

frame in Kang's disclosure has to be scanned before the scene transformation could occur.

20. In regards to claim 21,36-38,49-51, the method operation of translating a view frustum in accordance with the change in position of the head of the user includes rotating the view-frustum about the head of a user according to the change in position of the head of the user (Kang Claim 5).

Response to Arguments

21. Applicant's arguments filed 7/16/07 with respect to claims 1-26,28-44 and 46-57 have been considered but are moot in view of the new ground(s) of rejection.

Response to Arguments

22. Applicant's arguments filed 12/04/07 have been fully considered but they are not persuasive.

23. On page 20, applicant argues, "Further, Kang would not adjust a scale of the scene according to a change in a distance of the head of the user from a capture device as specified in claims I, 14, 22, 28, 33, 39, 46 and 52, or include a camera having depth capability as specified in claims 7 and 31, since the change in relative object depth compared to the distance to the camera must be small under the affine model (see column 5 lines 58-63). For the affine model to work, it is required that the surface appear planar. In order for the face to appear planar, the distance from the user to the camera must be relatively large. The use of a depth camera would render moot the entire affine model principles for which Kang is constructed"

24. The examiner respectfully disagrees. Kang's invention is directed to 2-D affine "transformation". Kang teaches that the technique is suitable for planar surfaces with an affine camera model especially when the user is far from the camera. Therefore, a depth camera would not render moot Kang's affine model technique. Please see Col 6:44-60 of Kang.

25. On page 21, applicant argues, "The Examiner indicates that the teachings of Kanade would motivate one skilled in the art to interact with a view of a scene using depth capturing to adjust a scale of the scene according to a change in distance of the head of the user. Although Kanade teaches the identification of depth, the depth is only needed to capture the user, who needs to stand in from of a backdrop. These teachings do not teach to adjust the scale of the scene. In fact, the position of the user's head is in no way tied to any adjustment in a scene. The only distance tracking done is to identify where the user is located, so that objects can be positioned in and around the scene. As a further distinction, the "scene", as claimed is different from the area captured by Kanade. Specifically, in the claimed invention, the view-frustum is adjusted in accordance with the change in position of the head of the user and the adjusting of a scale of the scene takes placed according to a change in a distance of the head of the user from a capture device. In Kanade, the user is "in the scene". That is, the user is captured, and then injected into the scene. What the user does in the scene in no way performs adjustments. Indeed, if the user moves his head, the scene is not adjusted."

26. However, Kanade is not being relied upon for the teaching of adjusting the scale of the scene. As shown above, Kang teaches adjusting the scale of the scene based on

user location information received from a camera. Kanade is being used to show that using depth capturing image to capture depth information of a user during a gaming session is old in the art (Kanade abstract).

Response to Arguments

27. Applicant's amendments/arguments filed 4/28/08 have been fully considered. Please see paragraph 13 above which addresses the newly added limitations.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMMANUEL OMOTOSHO whose telephone number is (571)272-3106. The examiner can normally be reached on m-f 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pezzuto can be reached on (571) 272-6996. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EO

/Ronald Laneau/
Primary Examiner, Art Unit 3714

07/04/08